

NOTE ON THE BRAIN OF
HALICORE AUSTRALIS. Owen. (1)

By N. DE MIKLOUHO-MACLAY.

(Plate XXIV.)

During a visit to the Islands of Torres' Straits in April, 1880, I had the opportunity of obtaining on the Island Mabiak (2) a head of a Dugong, for the purpose of studying its brain.

I received the head a very few hours after the animal was killed, and proceeded, without delay, to secure the brain. It took me some time to free the skull from the very thick skin (3) and the muscles of the neck. Being anxious not to injure the brain, and not having examined sections of the skull of *H. Australis* before, I thought it safer to make, instead of the stereotyped circular cut of the cranium, a median longitudinal section of the same, which process, however, required time and patience on account of the very dense texture of the bones of the skull.

(1) Prof. Owen separated the *H. Australis* from the *H. indicus* on account of specific distinctions as: the difference in dental formula and of certain osteological characters. [Vide: Notes on the characters of the skeleton of a Dugong (*Halicore Australis*) by Professor Owen, F.R.S.; published as an Appendix (No. IV.) of the Narrative of the Surveying Voyage of H.M.S. Fly, by T. Beete Jukes, London, 1847, Vol. II., p. 326.]

(2) The Dugong is still very plentiful in Torres' Straits and on the south coast of New Guinea, where the natives catch them with big nets and kill them by keeping the Dugong under water until he is drowned. The flesh of the Dugong is relatively good to eat (when you have nothing better), it is like beef, but rather coarse and dark.

(3) The thickness of the skin of the neck and the back, after it had been tanned, (for which purpose the skin had to remain about 10 months in the pit) was over 25 mm. (or over 1 in.)

I was able at last to saw the skull through, and made with a long sharp scalpel the median section of the brain, which proved to be in the most perfect (fresh) condition for examination. A sketch of the section was made at once, because I had no means of preserving the brain *in the skull* in alcohol, and I knew that it would be greatly distorted by the taking it out from the cranium.

I extracted, as carefully as I could under the circumstances, (sacrificing, however, the pituitary body and the pineal gland), the two halves of the brain from the cranial cavity and kept them well surrounded with wadding for a few days in strong alcohol of about 90 %.) My time at Mabiak being very fully occupied, I contented myself as regards the Dugong's brains, with the sketch above mentioned and a few remarks in my diary. As the brain appeared to me sufficiently hardened I embedded it in wadding and a piece of soft calico, and left the small parcel amongst other anatomical specimens in a jar (filled with alcohol of about 40 %) waiting my leisure and opportunity for further examination. [I mention all these details because I know too well how much the value of anatomical investigations depends upon *the state* of the investigated material.]

A few weeks ago unpacking some of my New Guinea collections, I came across the packet with the Dugong's brain which proved to be in a very good state of preservation, and not being aware of a description of the brain of *Halicore* (1), decided to complete the examination of it. Of course its having remained for 4 years in alcohol had some effect upon the brain, and still more the removal of it from the cranial cavity.

The comparison of the two representations of the *same* median section (fig. 3 and fig. 4) shows the effect of the long preservation on some parts of the brain, [bending of the corpus callosum,

(1) The brain of *Manatus americanus* has been described by Dr. Murie (Transactions of the Zoological Society, VIII., p. 127) and by Mr. A. H. Garrod (Transactions of the Zoological Society, X., p. 137. Shaded outlines with reference to the shape of the upper surface of the brains of: *Manatus*, *Halicore*, *Rhytina* are given in Brandt's *Symbolæ Sirenologicae* (Mem. de l'Acad. Imp. des Sciences de St. Petersbourg. Tome XII., (1868), p. 234.

stretching the crura cerebri, &c., &c.] After these preliminary explanations I shall proceed to make a few remarks in explanation of the adjoining figures on plate XXIV.

Already the first examination of the brain at Mabiak showed me after the removal of the very thick pia mater, that the surface of the hemispheres was smooth, without convolutions, with the exception of a transversal depression on the sides in the middle of the hemispheres and a deep fissure corresponding more or less to the fissura Sylvii. These fissures are short and differently shaped on the two sides. (Fig. 1 and Fig. 2.) Examined from below there are two other sulci, the sulci olfactorii running obliquely forward and covered with the broad tracti olfactorii.

Horizontal sections of the hemispheres show thin walls and extensive lateral ventricles, the lumen of which has been, in the specimen in question, very much reduced by collapsing of the thin walls. It is only a result of the mode of preservation: should the brain have remained in the cranium in situ, the walls of the hemisphere would have kept their shape, maintained in their natural position by the membranes and blood-vessels of the brain.

I have specimens of sections of different brains in situ *in the skull* which have kept for years their shape and very nearly their size.

The corpus callosum covers the thalami optici (fig. 3), the columns of the fornix, the septum lucidum (1) and the hippocampus major are well developed. The anterior white commissure is not large but quite distinct. The upper surface of the comparatively big thalami optici with a large commissura mollis are covered with the ample folds of the choroid plexus which is closely connected with the epithelium of the third ventricle. (Fig. 2.)

The anterior tubercle and the pulvinar are separated by a distinct oblique groove.

(1) In my notes made at Mabiak, I find no mention of a ventricle of the septum lucidum and at present it is impossible to decide with certainty about its prior existence and extent.

The corpora quadrigemina are not large and on the median section show that the aqueductus Sylvii extends into a narrow triangular cavity. The posterior wall of the corpora quadrigemina is rather thin.

The Cerebellum examined from behind is divided into some 10 portions (fig. 5) which divisions however, are rather superficial, as can be seen on the horizontal section of cerebellum. (fig. 6)

The deepest fissures are to be seen on the median section (fig. 3 and fig. 4) and divide the cerebellum (examined on the median section) into 3 lobes, of which the anterior is the largest. Corresponding to the lobes the stem of the white substance ramifying in the arbor vitæ is divided into 3 principal branches.

The pons Varolii is well developed.

The principal object of the publication of these few remarks about the brain of *H. Australis* is the hope, that they may induce anatomists in Australia, who may have ample opportunity (on the coast of Queensland, even in Brisbane) to obtain the Dugong, to fill up the numerous gaps in these notes which being the result of the dissection of *one* brain are necessarily incomplete.

EXPLANATION OF PLATE XXIV.

(All the figures Nat. Size.)

- Fig. 1.—Brain of *Halicore Australis*, Owen, from the side. II.—n. opticus, V.—n. trigeminus.
- Fig. 2.—The left hemisphere of the same brain from the other side to show the different shape of the deep lateral fissure (fissura Sylvii). I.—Tractus olfactorius.
- Fig. 3.—Rough sketch of the median section of the same brain made at Mabiak, showing the same *in situ*, in the cranium. The falx is covering a great part of the hemisphere.
- Fig. 4.—The same section, after a photograph taken in Sydney from the same object, about four years later.
- Fig. 5.—Diagrammatic view of the cerebellum of the same brain from behind.
- Eig. 6.—Horizontal section of the cerebellum, the position and direction of which is indicated by the dotted line (* *) in Fig. 1. To—Thalami optici, cq—Corpora quadrigemina, v—Fourth verticle.